Default Fund and Supplementary Margin Methodology

1.0

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1. Introduction

1.1 Background and purpose

EMIR article 42 requires a CCP to maintain a pre-funded default fund to cover losses that exceed the losses to be covered by margin requirements laid down in Article 41, arising from the default of one or more clearing members. EMIR article 43 further specifies that the default fund and the CCP's other pre-funded financial resources shall enable the CCP to withstand the default of at least the two clearing members to which it has the largest exposures under extreme but plausible market conditions.

According to ECC's risk strategy, ECC's default fund is sized to cover the losses of the default of the two largest clearing members under extreme but plausible market conditions ("cover-2" requirement).

Furthermore, EMIR article 42 requires a CCP to establish criteria to calculate the contributions of single clearing members and to define a minimum size of contributions to the default fund. The contributions to the default fund shall be proportional to the (risk) exposures of each clearing member.

The clearing member stress exposures are monitored daily. If the stress exposure of the two largest clearing members exceeds the total default fund, supplementary margin requirements are calculated and called.

The following documentation outlines ECC's methodology to determine the total default fund amount and the single clearing member default fund contribution, the supplementary margin methodology as well as the monitoring and adjustment processes.

2. Methodology

2.1 Determination of the Total Default Fund size

The Total Default Fund is sized using the following 3 components:

Statistic Component and Buffer

The sizing considers the average daily[1] cover-2 stress test result $\emptyset_L Stress_{Cover-2}$ over a dedicated look-back period L, increased by a buffer[2] b.

The buffer is introduced to consider larger fluctuations of the stress test results between the regular monthly recalibration dates of the default fund and to avoid ad hoc re-sizing or frequent supplementary margin calls.

Cap

To avoid over-mutualization of stress risks which mainly results from built-up of stress risk exposures of a single clearing member and which are not connected to an overall systematic increase in stress risks, the overall size of the Default Fund is capped in relation to the total initial margin requirement[3] on ECC level.

Any stress test result exceeding the total default fund cap will be charged as additional supplementary margin from the clearing members which are responsible for the stress test results (see 2.3).

Floor

The floor is established on clearing member level to ensure a minimum level of protection (see 2.2.1).

Considering the 3 components above the Default Fund is calculated as follows

$$DF_{ECC}^{actual} = min[(1 + b) \cdot \emptyset_L Stress_{Cover-2}; cap \cdot \emptyset_L\ IM_{ECC}]$$

The current values of the look-back period L, the buffer b and cap are published on the ECC website[4].

2.2 Clearing Member Default Fund Contribution

The single clearing members default fund contribution is calculated as maximum of two components in line with the requirements of EMIR article 42. The minimum default fund contribution shall ensure minimum levels of protection. The initial margin (IM) / stress loss over initial margin (SLOIM) based default fund contributions shall ensure that the total default fund is allocated proportional to the exposures of each clearing member.

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[1] Daily refers to ECC Business Days

[2] A multiplicative buffer to the stress test results shall reduce likelihood for SSMB if stress results exceed the total default fund.

[3] The initial margin used in chapter 2 and 2.2 considers the margin classes SPAN and IMSM.

[4] See current parameter file „ECC Risk Parameters" under https://www.ecc.de/en/risk-management/margining

2.2.1   Minimum Default Fund Contribution

The Minimum Default Fund Contribution of a single clearing member is the maximum of an absolute and a relative minimum component.

Absolute Minimum

The absolute minimum is 0.5 mn. EUR for Direct Clearing Member (DCM), 3.0 mn. EUR for General Clearing Member (GCM) and 2.0 mn. EUR for Central Counterparties with an EMIR License acting as a Clearing Member.

Relative Minimum

The absolute minimum does not discriminate for size or economic capability of clearing members[5]. To ensure adequate and effective minimum default fund contributions also in case of low stress contributions (e.g., for clearing member with several margin accounts with opposite positions leading to an overall strongly hedged position on clearing member level) and to ensure a balanced and stable default fund composition, the default fund contribution shall be floored relative to the clearing member's margin requirement.

The relative minimum $floor \cdot \emptyset IM_{CM}$ is calculated based on the average initial margin of a clearing member $\emptyset IM_{CM}$ over the look-back period L. The current value of the floor can be found in the risk parameter file on the website[6]

2.2.2   IM / SLOIM based Default Fund Contribution

The IM / SLOIM based default fund contribution for a single clearing member is calculated based on the average initial margin (IM) and stress loss over initial margin (SLOIM)[7] share over the look-back period L and weighting factor $x \in [0\%, 100\%]$:

$$DFC_{CM}^{Mix} = \left[x \cdot \frac{\emptyset_L \, IM_{CM}}{\Sigma_{CM} \, \emptyset_L \, IM_{CM}} + (1-x) \cdot \frac{\emptyset_L \, SLOIM_{CM}}{\Sigma_{CM} \, \emptyset_L SLOIM_{CM}} \right] \cdot DF_{ECC}^{actual}$$

The calculation of the average initial margin $\emptyset_L \, IM_{CM}$ and the average stress loss over initial margin $\emptyset_L \, SLOIM_{CM}$ uses the actual observations per clearing member over the look-back period L. If for a clearing member no values are available for several dates within the look-back period (e.g., in case of a new clearing member admission), the average of the clearing member will be calculated based on the actual observations and no imputation will be applied to replace missing values.

The current value of the weighting factor x can be found in the risk parameter file on the website[8].

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[5] Here, the margin requirement is used as proxy for the clearing member's size and economic capability

[6] See current parameter file „ECC Risk Parameters" under https://www.ecc.de/en/risk-management/margining

[7] Here, the worst stress loss over initial margin on a business day t for a clearing member CM in any applied scenario s is used:

$$SLOIM_{CM}(t) = \max_{s \in Scenarios} SLOIM_{s,CM}(t)$$

[8] See current parameter file „ECC Risk Parameters" under https://www.ecc.de/en/risk-management/margining

2.3 Supplementary Margin Requirement

EOD Supplementary Margin (SSMB) is called if the loss in case of the default of two clearing member in a stress scenario exceeds the total default fund. The required SSMB is allocated to the clearing member according to the stress loss contribution in such a scenario as outlined below.

Let $SLOIM_{s,CM_i}$ be the stress loss over initial margin[9] of clearing member CM_i in scenario s.

For each scenario s and each combination i, j a scenario SSMB requirement is calculated as follows

$$SSMB_{s,CM_i,CM_j} = \max\left(SLOIM_{s,CM_i} + SLOIM_{s,CM_j} - f_{DF} \cdot DF; 0\right).$$

To ensure sufficient coverage of financial resources in times of increasing stress test results, EOD supplementary margin will be already required in case the stress test result exceeds a share $f_{DF} \leq 1$ of the default fund. The current factor f_{DF} can be found in the risk parameter file on the website[10].

The SSMB requirement in the scenario s is allocated to each clearing member whose SLOIM in the scenario exceeds 50% of the relevant share of the Default Fund.[11]

Based on the exceedance

$$Exceed_{s,CM_i} = \max\left(SLOIM_{s,CM_i} - 50\% \cdot f_{DF} \cdot DF; 0\right)$$

The SSMB requirement for clearing members $i.j$ in the scenario s is

$$SSMB_{s,CM_k}^{Default\ of\ i,j} = \frac{Exceed_{s,CM_k}}{Exceed_{s,CM_i} + Exceed_{s,CM_j}} \cdot SSMB_{s,CM_i,CM_j} \quad k = i, j.$$

The final SSMB requirement for a clearing member i is the maximum of these scenario SSMB

$$SSMB_{CM_i} = \max_{s \in scenarios, j \in CMs} SSMB_{s,CM_i}^{Default\ of\ i,j}$$

If the scenario shortfall in a cover-2 scenario exceeds not only the Default Fund but also ECC's first skin-in-the-game $SiTG$, the supplementary margin has to be called intraday to ensure compliance with EMIR Art. 43. The Intraday Supplementary Margin (SSMA) requirement in a scenario s for the clearing member combination $i.j$ is calculated analogously considering ECC's financial resources and the full default fund amount

$$SSMA_{s,CM_i,CM_j} = \max\left(SLOIM_{s,CM_i} + SLOIM_{s,CM_j} - DF - SiTG; 0\right).$$

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[9] Without considering any available SSMB
[10] See current parameter file „ECC Risk Parameters" under https://www.ecc.de/en/risk-management/margining
[11] The threshold of 50% default fund ensures compliance at all times with article 43 of EMIR since the following always holds:

$$Stresstest_{ECC} = \max_{s \in Scenarios}\left[SLOIM_{CM_1}(s,t) + SLOIM_{CM_2}(s,t)\right] \leq \underbrace{\max_s\left[SLOIM_{CM_1}(s,t)\right]}_{\leq 50\% \cdot f_{DF} \cdot DF} + \underbrace{\max_s\left[SLOIM_{CM_2}(s,t)\right]}_{\leq 50\% \cdot f_{DF} \cdot DF} \leq f_{DF} \cdot DF$$

3. Recalibration

3.1.1 Default Fund

The total default fund requirement and the default fund contributions of each clearing member are updated on the first business day of each month.

Ad-hoc adjustments of the default fund are completed in the following cases:

- Admissions of new Clearing Members: In such case the absolute minimum default fund contribution will be requested from the member as precondition for admission
- Termination of Clearing Members: In such case the default fund contribution will be returned according to the Clearing Conditions[12].
- If the risk situation changes significantly and existing mitigating measures focusing on selected clearing members, in particular charging supplementary margin for excess stress losses, are not considered sufficient by ECC's risk assessment.

3.1.2 Parameter

The applied parameters to determine and allocate the default fund as well as supplementary margins will be reviewed at least on an annual basis or ad-hoc, if required.

The annually proposed parameter setting shall be discussed with the EMIR risk committee and be approved by the management board.

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[12] According to 3.7.5 Clearing Conditions, ECC will release the default fund contribution after a period of one month after the notice regarding the termination; however, at the earliest one month after the day on which all after closing of all positions and completion of pending payments. If the termination and the release of the default fund contribution of the clearing member lead to a shortfall of the remaining default fund, ECC will adjust the default fund contribution of the remaining member on the next regular update date which lies within the one month period, i.e. between date of termination / closing of all positions and earlies date of release.

4. Document Basics

4.1 Change History

Version	Date	Explain change(s)	Changed section
V1.0	18.07.2023	Initial version	All